

Training Course Goal: Transfer of Physical Protection Techniques

Last week 27 representatives from 18 countries completed an intensive, 18-day training course on physical protection of nuclear facilities and materials. This year's International Training Course (ITC), held at Albuquerque's Marriott Hotel, was the seventh conducted by Sandia staff since the program began in 1978.

"In the 1960s and 70s, as the nonmilitary use of nuclear materials became more widespread — for example, in power reactors — a concern arose that unauthorized persons might obtain the materials," says ITC director Dennis Mangan (5217). "Sabotage of facilities or theft of nuclear materials, it was feared, could lead to the further spread of nuclear weapons."

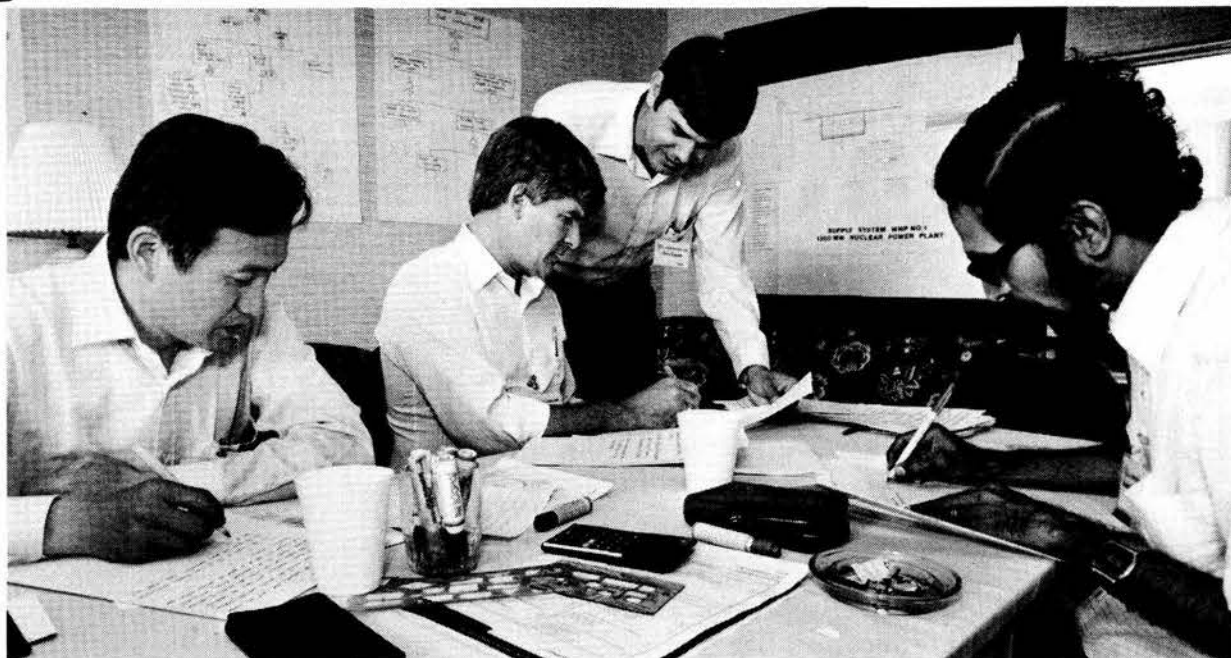
"Congress responded to those concerns in the early 70s with hearings that resulted in substantial programs on physical protection R&D within several government agencies — the DoD, Nuclear Regulatory Commission [NRC], and DOE."

Lead-Lab Role

"DOE designated Sandia the lead lab for physical protection R&D in 1973 when it started its fixed-site physical protection R&D program," Dennis continues. "The Labs is considered the center of excellence for this type of technology; that's why we've played a key role in ITC since it was initiated. We're responsible for providing ITC lecturers and subgroup instructors, as well as for material preparation and course coordination and planning."

The ITC, sponsored by DOE's Office of Safeguards and Security (OSS) in consultation with the NRC, is conducted under the auspices of the Vienna-based International Atomic Energy Agency (IAEA). The training course furthers a commitment by the U.S., under the Nuclear Non-Proliferation Act of 1978, to transfer physical protection technology to developing countries, and to developed countries on an as-needed basis. A total of 173 students representing 42 different countries have participated thus far.

Joe Stiegler (now 6320) headed the department in charge of arrangements for the first ITC in 1978, and was the Sandia representative on the international



JIM CHAPEK (5249, standing) consults with a member of his ITC subgroup. Group members didn't pay much attention to the camera since they were getting ready to make a presentation to other ITC students the next day. Jim's subgroup included students from Indonesia, India, Poland, Canada, and China.

steering committee for that course. He had worked earlier in Vienna with IAEA members on planning the course outline. "Having the chance to initiate this technology transfer effort, along with the opportunity to interact with people from different cultures in an in-depth way, was a great personal experience," says Joe.

Chris Olson (5268), course director for the first four ITCs, says, "We suspected, when we started the program, that two facts about Sandia physical protection technology would emerge from ITC: first, that our technology was unique; and second, that it

(Continued on Page Four)



LAB NEWS

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SANDIA NATIONAL LABORATORIES

MAY 22, 1987

Under the Bond Umbrella

Get Ready for that Rainy Day With the Great American Investment



BOND CHAIRMAN DICK CRANER (3180) was glad he had his bond umbrella one recent blustery day. He urges all Sandians to seek the same kind of shelter.



All-American Rain Check

Sandia's 1987 U.S. Savings Bond Drive kicks off next week and continues through June 5. "Buying bonds is a great way to save for a rainy day," says Dick Craner, manager of Classification and Sensitive Information Review Dept. 3180 and chairman of the Savings Bond Committee. "So we're urging all Sandians to get under the 'Bond Umbrella' this year."

"It's obvious that Labs employees at all of our locations — Albuquerque, Livermore, Tonopah, Pantex — recognize the advantages of buying bonds," Dick continues. "Last year we finished the campaign with more than 96 percent participation, once again placing us in the 'top 10' on the honor roll of U.S. corporate leaders."

This year's bond drive will be conducted pretty much like campaigns of the past few years. ("Why argue with success?" asks Dick.) VP coordinators will conduct the drive in their organizations with the help of directorate coordinators and canvassers. As usual, all employees will receive a payroll deduction card.

If you're already sheltered by the bond umbrella, you're well aware of the many advantages you gain with what the Department of the Treasury calls

(Continued on Page Ten)

ITC Continues To Evolve, Improve

"It's appropriate for Sandia to coordinate the ITC technology exchange," says Bill Myre, Director of Nuclear Security Systems 5200. "As the lead lab for physical protection R&D, we have, since the early 70s, been involved in all aspects of physical protection technology development."

"The course continues to evolve and improve, based on feedback from students and instructors," Bill continues. "It's especially pleasing to learn that these courses have made a difference in the physical protection systems of other countries. In many cases, we've invited back former students as guest lecturers for later courses."

"I believe that the ITC benefits not only the many nations involved in the program, but also the Sandia people and programs involved. In particular, subgroup instructors come away with a much broader understanding of physical protection systems. This is accomplished only with dedication, hard work, and long hours. Basil Steele, a subgroup instructor last year, put it very well: 'I feel like the mother of an only child. I wouldn't have missed the experience for anything, but once is enough!'"

Antojitos

Overlooking the Poole Yes, we have a stable of LAB NEWS reviewers. But when it gets right down to it, those of you out there who read one of the 15,000 copies that we print every other Friday are our ultimate reviewers. It's seldom (I fervently wish to believe) that an error goes unnoticed by at least one reader.

Case in point: Last issue we noted that John Crawford was following the trail to Sandia Livermore blazed by Burnie Biggs, Tom Cook, and Dick Claassen. True, as far as it went. Two readers (Clyde Walker, 5212, and Bill Martin, 3420 -- neither, interestingly enough, from Livermore) pointed out that I had omitted the first Livermore VP -- Bob "Rob" Poole. Guess it's what happens when the newspaper is entrusted to a mere less-than-22-years-of-Sandia-service youngster.

For the record then: SNLL became operational in early 1956, under DM Jack Howard. Jack was promoted to director of 1800 (reporting to VP Bob Henderson) in the fall and essentially ran the place until Org. 8000 was formed, with Poole its VP, in the fall of 57. Then came Biggs (60-68), Cook (68-82), Claassen (82-87), and now Crawford.

* * *

Semantic Shenanigans Back when Jack Howard was heading for Livermore, he realized he was going to need a departmental budget for test equipment -- but how much? for what? As I heard the story, Jack submitted a budget request that included \$250K for a "hydraulic subterfuge." It wasn't until Jack was in Livermore and the money was in hand (maybe spent) that an accountant from AEC/SAN came out to see the device.

* * *

Out in the Rest of the World, the name "Livermore" may not be immediately identifiable, but once Rest of World associates Livermore with "California," the town is widely known to be a part of the U.S. Not so for New Mexico. Or so Tech Reps, one of Sandia's subcontractors, is learning. The company received a package from the Tennessee-based U.S. Pencil and Stationary (yes, that's the way it's spelled on the return address label; apparently not a very dynamic company). The package was marked for "Special Handling Procedures -- Outside Continental United States."

Well, so much for Tennessee. But you'd expect the Small Business Administration in Washington to know a bit about this country's geography, right? Well, expect again: In response to its application for a Procurement Automated Source System (PASS), Tech Reps received a most courteous letter noting that "Our policy is that only small firms with an office in the United States can be included in the PASS database."

●BH

* * *

Lest W.E. Forget Game-show host: "Name the company the Bell company acquired in 1881 to make its equipment." Winning contestant: "Western Electric." ABC-TV's "Jeopardy," 4/28/87

No Scents Here



Lavin's Restaurant and Wine Bar in New York posts a sign asking people not to wear Giorgio perfume or patchouli in the dining room. The smells interfere with the aroma of good food and wine, says owner Richard Lavin, who also bans pipes, cigars, and clove cigarettes.

Wall Street Journal

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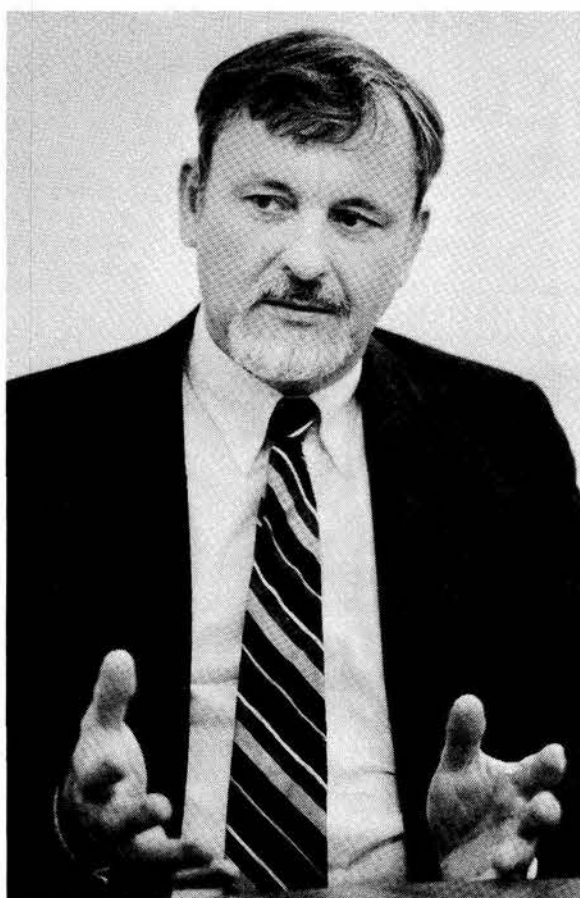
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"SANDIA IS IN A TREMENDOUS POSITION to work innovatively and creatively," noted former Sandia EVP Al Narath in an interview last month. Al is now Vice-President of Government Systems at AT&T Bell Labs.

Interview with Al Narath

Former Insider Provides View From Outside

Lots of AT&T management folk over the years have punctuated or climaxed their careers with a stint at Sandia. Al Narath is the mirror image of that pattern -- he's a Sandian who rose to the executive VP level, then left for AT&T. He's now Vice-President of Government Systems at AT&T Bell Labs.

His experience gives him a unique perspective, that of looking back into his home lab from the "parent" lab. In a brief chat in Albuquerque last month, LAB NEWS asked him to share some of those perspectives.

"First of all, the place looks great," he began. "It's a beehive of activity, and that's certainly reassuring."

"I'm not surprised, of course," he went on. "My contacts back here keep me posted on what's going on. And contacts in Washington [D.C.] often mention the work Sandia's doing. Sandia's thought of highly back there."

How has that Washington view of Sandia shifted in the last decade or so? "Washington continues to appreciate Sandia's strong engineering development work, as always," Al answered. "But now,

Narath Honored by National Academy

Al Narath was recently elected to the National Academy of Engineering for 1987. Election to the Academy is the highest professional distinction that can be conferred on an engineer.

His election was based on his "effective leadership in weapons, energy, and government communications systems."

with a wider variety of programs under way, Sandia's more visible -- more windows to the world, so to speak; that is, more Washington folks have insight into the Sandia style.

"And that's good," Al continued. "Sandia is one of very few GOCOs [government-owned, contractor-operated] that really knows how to make something happen."

And how's the local boy doing Back East? "It's very exciting," he replied. "And it's very busy -- stacks of papers every weekend, that sort of thing. I'm certainly not looking for any more new opportunities. We're essentially rebuilding the part of Bell Labs that works directly with the federal government -- and we're growing at 20 percent a year."

"Bell Labs reduced its activities in the federal sector in the 70s after the ABM [anti-ballistic missile] treaty was signed," said Al. "We're now getting back in. You see, AT&T's Federal Systems organization [headed by former Sandian Warren Corgan] provides specialized 'information management and movement' solutions based on both standard and custom-designed systems. My group provides the R&D support for that organization."

How different are the two labs? "Quite different in my experience," Al responded. "Bell Labs has become strongly market-oriented since divestiture, while Sandia is 'technology-driven.' In the weapons programs, for example, you can plan and implement forward-looking technical work. That kind of self-initiation is rarer at Bell Labs, at least for our group, working as it does on DoD contracts -- less chance there for independent R&D."

"Sandia, on the other hand, is in a tremendous position to work innovatively and creatively without undue bureaucratic interference," Al continued. "I really look back fondly on my Sandia experience."

So are you coming back to Sandia, Al? "Time will tell," said Al, practicing his enigmatic smile.

●BH

Mitchell Wins Research Award

Reginald "Reggie" Mitchell (8361), a coal combustion scientist at the Combustion Research Facility, has received the 1987 Percy Julian Award for "outstanding and significant contributions to research in the field of combustion science."

The award, the eighth since its establishment in 1975, was given by the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers. The presentation was made by Awards Committee Chairman James Porter, founder and president of Energy & Environmental Engineering in Cambridge, Mass., at the organization's annual meeting in San Francisco on April 16.

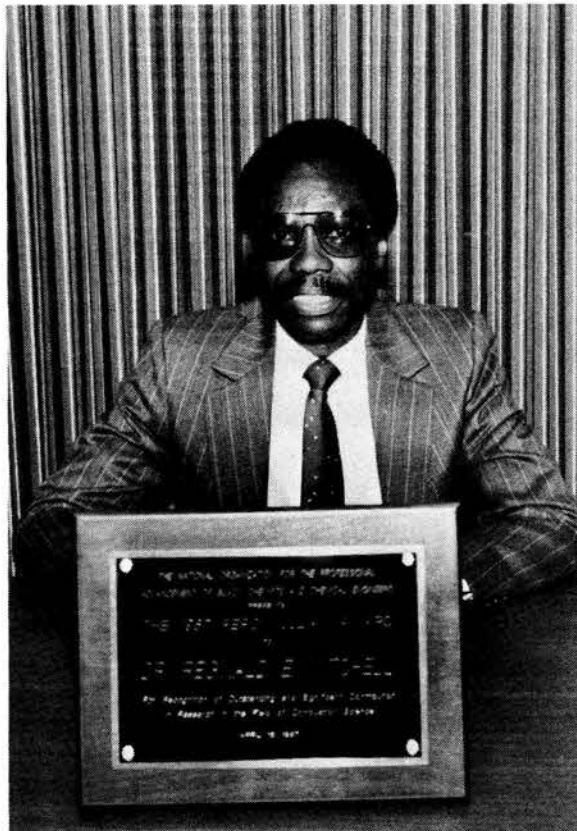
Praising Reggie as an "outstanding and creative researcher," Bill McLean, manager of Combustion Technology Department 8360, noted that Reggie is "one of our most productive scientists. His work has received widespread recognition both in the U.S. and internationally."

Reggie came to Sandia in 1975 after earning his ScD (Doctor of Science) degree in chemical engineering at M.I.T. His early research involved modeling the chemical aspects of combustion systems.

Five years ago he turned to research on pulverized coal. Specifically, he has worked to determine, both experimentally and analytically, the rates and mechanisms by which pulverized coal oxidizes under conditions typical of practical large-scale coal-fired boilers. In conducting this research, he has pioneered the application of simultaneous, optical, *in-situ* measurements of particle size and temperature to determine the burning rates of individual coal particles.

Reggie has had papers accepted by the last three biennial International Combustion Symposia as well as by International Coal Science Conferences. He has also collaborated extensively with visiting scientists from laboratories and universities throughout the world.

For two years Reggie was vice-president of the



PROUDLY DISPLAYING his Percy Julian award is researcher Reggie Mitchell (8361).

Bay Area Chapter of the Black Chemists and Chemical Engineers group; this year he was elected president. He lives in Piedmont.

Congratulations

Cynthia and Brian (8024) Chamberlain, a daughter, Amy Elaine, April 15.

Cheryl (8316) and John Lawrence, a son, Christopher Andrew, April 30.

Chris and Herb (ASI) Woelfer, a son, Justin Bradley, May 5.

Edele (8271) and Rob Norman, a son, William Thomas, May 11.

Bond Drive Kicks Off

The 1987 Savings Bond Drive begins May 26 at Sandia Livermore. Sharron Norris, supervisor of Mail Distribution Section 8024-1, chairs this year's campaign. Vice-chairman is Paul Van Dyke, supervisor of Measurement Standards & Photography Division 8186.

Not Going Home for the Holidays?



In a study conducted by Research & Forecasts Inc., ...only about half of surveyed adults with children think that holidays are an important family time. Vacations are ranked even lower; only about 40 percent of those questioned usually consider vacations as family time. By contrast, sharing at least one meal a day is an almost universally desired family activity. Three-quarters of families say evenings are an important time for them to be together, and two-thirds consider weekends a family time. ... A majority of adults who live in families enjoy being with the rest of the household on a day-to-day basis. On occasion, however, they also want a vacation from the family.

Wall Street Journal

Info Given, Info Received

Schmieder Discusses EBIS in Soviet Union

Bob Schmieder (8347) traveled to the USSR recently to participate in the All-Union Conference on Particle Accelerators at Dubna and to present an invited paper on "Recent Developments in the Electron Beam Ion Source (EBIS) Design." The paper covered related programs at Sandia, LLNL, and Kansas State University. The exchange of information resulted in some advances in the EBIS program.

Of the 350 conferees, only 10 were from outside the Soviet bloc. David Clark of Lawrence Berkeley Lab was the only other American. There were four scientists from West Germany and one each from Canada, Belgium, France, and Japan.

Sessions of the four-day conference were held at the Hall of Culture, a multipurpose building used for large meetings, concerts, and public events. It was only two blocks — "an easy walk" — from the Dubna Hotel where all the foreign visitors were housed.

"I delivered my talk in English," Bob reports, "but it was translated simultaneously into Russian and broadcast to the conference participants via small ultrasonic receivers akin to pocket radios. Luckily, the reverse was true too — English translations were provided for all the talks that were in Russian."

"The authors posted their manuscripts in Russian with no translations, and there were no diagrams or photographs. All the talks were accompanied by viewgraphs, but the projector was so poor that some of the illustrations were unrecognizable."

"One speaker hurried so fast through his massive presentation that he was asked by the chair to slow down," Bob adds. "But he persisted, claiming if he went slower he would have no time to say anything."

"The Soviet scientists were exceptionally good

hosts, providing for our every need," Bob says. "There was virtually no political discussion; the conference subjects were limited to specialized areas of particle accelerators."

More than Meetings

Bob also toured the Joint Institute for Nuclear Research (JINR), a large multifunction laboratory comparable to Brookhaven or Oak Ridge. The seven component laboratories that make up JINR employ nearly 5000 people. "The laboratories completely dominate the small town of Dubna [about 100 miles south of Moscow], which has only one department store, a post office, bookstore, public swimming pool — and one inoperative traffic light," Bob reports.

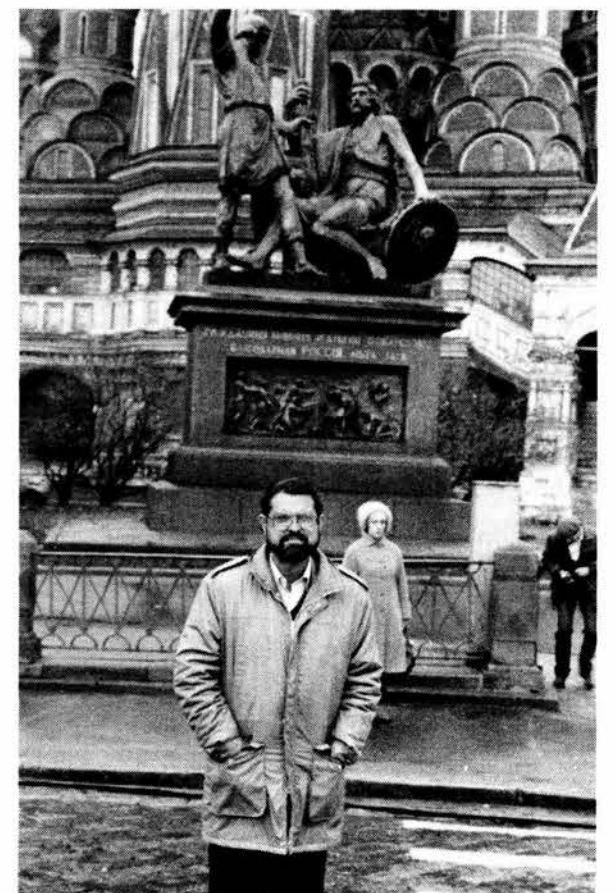
"What impressed me most in my tour of the labs was the collective effects [electron ring] device of Prof. V. P. Sarantsev," Bob continues. "It was very clean, modern, and used state-of-the-art accelerator technology."

"Many of the other labs appeared from the outside to use relatively primitive technology. For example, much of the vacuum equipment was made of brass, and electrical connectors were of the kind common in the U.S. decades ago. The electronics supporting the machines were spartan, and the microcomputers use standard chip circuitry."

Bob also met with researchers at two laboratories in West Germany: the GSI heavy-ion accelerator lab in Darmstadt and the EBIS lab at the Institut für angewandte Physik in Frankfurt. At the Frankfurt facility, he discussed the design of Sandia Livermore's EBIS.

"That discussion, plus the information I col-

lected at Dubna, enabled us to make significant changes in the sequence of development on the Sandia EBIS; this will allow completion of an operating machine sooner than was previously anticipated." Redesign based on the overseas meetings is already well under way.



BOB SCHMIEDER (8347) on Red Square in Moscow

ITC

had universal applicability. We were right on both counts."

ITC students — all from IAEA member states — work hard to absorb the material presented to them in a relatively short period of time, according to Terri Olascoaga (5248), course coordinator. "The course centers on a series of lectures presented by experts on a variety of topics," she says.

Lecturers at this year's ITC were Ric Davis (5253), Ellis Heustess (5215), John Kane (5262), John Matter (5212), Jim Martin (5248), Basil Steele (5249), Bob Workhoven (5267), and Bud Graves of DOE's Central Training Academy. Paul Ebel of BE Inc. (a South Carolina consulting firm) and Betty Biringer of Science & Engineering Associates — both under contract to Sandia — also gave lectures and were actively involved in preparing course material, training subgroup instructors, and conducting the course.

Lecturers covered a variety of topics: physical protection design processes, nuclear fuel cycle concerns, threat analysis, target identification, exterior and interior intrusion detection, alarm assessment, alarm communication and display, barrier technology, response force communication and equipment, entry control technology, and analysis techniques.

Subgroup Work

"After the lectures, students move into subgroups — five or six people to a group — to analyze and evaluate the material that's been presented to them," Terri says. "It's in the subgroups that the real work gets done. Group members don't just discuss the material they've heard; they also work as a team to solve problems related to the material, applying the concepts they've learned."

"The subgroup work is of primary importance, because information that's *used* is much more likely to be retained than information that's only *heard*," explains Dennis. "Therefore, subgroup training exercises ensure more effective technology transfer. In fact, the subgroups work most of the entire last week of ITC on a physical protection problem that's been assigned to them, then present their solutions on the last day."

Subgroup instructors (all Sandians) play a key role in the ITC learning process, according to Dennis and Terri. Before the ITC, the instructors undergo an intensive two-week training session covering all aspects of the course — training that prepares them for their leadership role in working with students who have different cultural backgrounds and levels of experience.

Dennis Miyoshi (5240), program manager for OSS physical protection programs, says the ITC benefits Sandia, as well as the students: "We use different subgroup instructors [typically five] at each ITC. These people usually are experts in one or two areas of physical protection technology. However, by the time they've finished the ITC, they have a well-grounded, broad background in the technology, as well as experience in working with members of the international nuclear community. That's a real plus for our safeguards effort here at the Labs."

Subgroup instructors this year were Jim Chapek (5249), Darryl Drayer (5219), Robert Hogan (5246), Gilbert Quintana (5245), and Stephen Williams (5253).

Sandia Staff Commitment

The ITC, offered every 18 months, is funded by DOE's OSS. There's a large investment of time by many Sandians and contract staff — not only during the course, but in advance planning and coordination.

Some of that time investment relates to hospitality. "We really want to make the students feel at home in America," says Terri. "So we entertain stu-



ALL ITC STUDENTS get together during the last day of the course to hear subgroups present solutions to a physical protection problem assigned them earlier in the week. Here, Mohammad Nawaz Qureshi of Pakistan leads off his group's presentation on averting sabotage at a mixed-oxide fuel fabrication facility. (Everyone's concentrating on those ever-present viewgraphs!)

Foreign Guest Lecturers, Field Trip

Besides the lectures and subgroup work, activities at the recent ITC included presentations by representatives from DOE, NRC, and LANL, and by seven foreign guest lecturers. "The foreign guest lecturers spoke on physical protection philosophies and practices in their respective countries," reports Dennis Mangan. "Their talks gave ITC participants an interesting perspective on how cultural differences and economic considerations may affect protection designs.

"For instance, in Japan there's very little concern about an insider threat," continues Dennis. "That's because of the Japanese culture. Loyalty — to family, country, and company — is

high on the value index there. That pretty much precludes the possibility of an insider threat. Yet — in this country and others — that threat is receiving more and more attention; it's viewed as an ever-increasing possibility."

ITC students also saw a demonstration (at the Marriott) of Sandia-developed physical protection equipment, and took a field trip to Richland, Wash. In Richland, they toured the Advanced Nuclear Fuels Facility and the reactors of the Washington Public Power Supply System. The facilities they saw, says Dennis, were similar to the hypothetical ones used in the subgroup exercises the last week of ITC.

To Sandia — From India

The weather will be cold
The wind will be dry,
Albuquerque
My patience will try.

One long month
Of rain and snow,
How would I feel?
I'd never know.

These were the thoughts
And more of their kind,
When I left India
That filled my mind.

But the love and affection
Of all at Sandia,
Made me at home
As if in India.

Barefoot in the snow
Or wrapped up at dinner,
Hats off! — to YOU
TO EVERYONE — a winner.

Patricia or Paul
Or Denny or Jim,
They brought together
Brian and Kim.

Oh! what fun
And sheer delight!
To be at the ITC
Be it day or night.

You people are great,
You people are nice,
You add to life
That bit of spice.

Even the snow
It did no harm,
It melted my heart,
Seemed tender and warm.

Year after year
Of roses and spring,
May God to you
Do happiness bring.

ITC COORDINATOR Terri Olascoaga (5248) says it's important that students in the course "feel at home" during their stay in America — and more specifically, Albuquerque. Judging from this poem by Ramakrishnan Seshadri of India, a student at this year's ITC, Terri and the rest of the Sandia staff rate a "10" on the hospitality index. Patricia Newman (3144) did the calligraphy.

R. Seshadri
14/5/87

PATRICIA NEWMAN (3144) works with Jose Galvan Ortiz of Mexico during an ITC subgroup session. Patricia's been on hand at all of the seven ITCs to help out on language problems. Besides Mexico, other countries represented in this subgroup were Egypt, Canada, India, Zaire, and Argentina. Darryl Drayer (5219) was group leader.



(Continued from Page Four)

ITC

dents in our homes. We also take the students on informal trips to places of interest in New Mexico and have a get-acquainted picnic in the mountains. These activities help to establish a special student/staff rapport; they're well worth the time and effort."

Patricia Newman (3144), course linguist, helped out with language problems during the technology exchange. "Patricia is a major contributor to the success of the ITC," says Dennis. "Chris Olson warned me when I took over the job of course director that the language barrier was a major problem. At the same time, though, he said that Patricia, with her expertise in many languages — along with her tech-

nical background and sensitivity to cultural characteristics — would be invaluable in overcoming these difficulties. He was right . . . we'd be lost without her! Patricia has a distinguished association with the course; she's the only person who's been involved in all seven ITCs.

"She and Terri Olascoaga also served as consultants to the Spanish government when that country conducted a similar course for Spanish-speaking people several years ago in Madrid."

Terri's no stranger to the course coordinator's job, as she served in the same capacity for the previous two ITCs. Other Sandians on the ITC staff were Nicky Whelan (5251), course administrator; Barbara Frames (5217), course secretary; and Cecil Sonnier (DMTS, 5217), guest lecturer coordinator. ●PW

Spare Your Wastebasket

If you're about to retire or leave the Labs,
don't toss your historically valuable records.

Corporate Historian Necah Furman (3151A) is looking for
audiotapes, records, and photos.
Call her on 6-9619.



WOMEN ON THE MOVE — This year 24 Sandians were nominated for the YWCA's "Women on the Move" awards program, and these three were winners in their categories. With President Welber displaying one of the Betty Slade watercolors each winner received, they are (from left) Jennie Negin (3411) in Business-Managerial, Carol Ashby (1126) in Science/Engineering/High Technology, and Shirley Wallace (132) in Business/Non-Managerial. Other nominees: Doris Miller (7543), Dawn Johnston (7866), Katherine Danforth (3745), Etta Moore (3452), Mary Beth Aragon (2151), Jennifer Gunter (5100), Shanna Cernosek (142), Diana Suina (3551), Sarah Sharpton (6316), Ellen Cronin (6330), Rena Haynes (7524), Sylvia Tsao (2147), Arthurine Breckenridge (2642), Shirley Perea (2851), Carolyne Hart (9133), Jennifer Gilbride (5152), Margaret Chu (6512), Marianne Walck (1541), Susan Harris (3330), Berweida Learson (3521), and Patricia Newman (3144).

Events Calendar

May 22-23 — "Spirit Dreams," one-woman theatre piece about growing up female; 8 p.m., Second Story Art Center, Albuquerque Little Theatre, 243-1673.

May 22-24 — "Beyond Therapy," comedy satire by Christopher Durang about a couple who meet through a personal ad and the not-so-helpful actions of their psychotherapists; 8 p.m. Fri. & Sat., 6 p.m. Sun.; Vortex Theatre (Central & Buena Vista), 247-8600.

May 22-25 — Quarter Horse Amateur Horse Show, indoor & outdoor arenas, NM State Fairgrounds, 265-1791.

May 22-26 — Photo exhibit by Diane Gutierrez of Santa Clara Pueblo; 9 a.m.-6 p.m. Mon.-Sun., Indian Pueblo Cultural Center, 843-7270.

May 22-26 — Exhibit, "Hispanic Women Artists," by native-born New Mexicans; South Broadway Cultural Center, 848-1320.

May 22-31 — "Separate Tables," 8:30 p.m. Fri., Sat., & Sun., Corrales Adobe Theatre, 898-3323.

May 22-31 — "The New Odd Couple," Neal Simon play, Felix and Oscar become Florence and Olive; 8 p.m. Tues.-Fri., 6 & 9 p.m. Sat., 2 p.m. Sun.; Albuquerque Little Theatre, 242-4750.

May 22-July 31 — Exhibit, "Maya: The Image from the Western World"; 9 a.m.-4 p.m. Mon.-Fri., 10 a.m.-4 p.m. Sat.; main gallery, Maxwell Museum of Anthropology, 277-4404.

May 23 — Pops Concert Under The Stars, New Mexico Symphony Orchestra; 8:15 p.m. (box suppers available at 6:30 p.m. or bring your own), First Plaza (downtown), 842-8565.

May 24 — Benefit musical: John Clark and Friends from UNM, Fantastic Four, others (proceeds to Kamp Kiwanis for crippled children); \$5 admission, 3 p.m., Highland High School Performing Arts Center.

May 25-31 — Navajo Trail Regional Bridge Tournament, duplicate play open to the public; 1:30 and 7:30 p.m.; Albuquerque Convention Center, Ballrooms A, B, and C; 299-5036.

May 29 — Tesuque Pueblo Blessing of the Fields and Corn Dance; call for time, 983-2667.

May 30 — Body Building Contest, 7:30 p.m., Albuquerque Convention Center, 292-1221.

May 30 — June Music Festival: Guarneri String Quartet; 8:15 p.m., Woodward Hall, 881-0844.

May 30-31 — Annual Spring Flower Show; 2-6 p.m. Sat., 10 a.m.-4 p.m. Sun.; Albuquerque Garden Center (10120 Lomas NE), 296-6020.

May 30-31 — Collectors' Showcase, antiques and collectibles show and sale; 10 a.m.-6 p.m. Sat., 10 a.m.-5 p.m. Sun.; Agriculture Bldg., NM State Fairgrounds, 883-6986.

May 31-June 22 — Exhibit, Isleta pottery by Stella Teller and family, 9 a.m.-6 p.m., Indian Pueblo Cultural Center, 843-7270.

feed back

Q. Now that the people writing SLIs have converted to the "information mapping" system, making the instructions not only readable but usable, when are the people writing job descriptions in Div. 3551 going to adopt the same system?

A. We have always recognized the need for clear and concise job descriptions and have implemented modifications over the years to improve their form and content. We will investigate the feasibility of adopting information mapping for job descriptions.

Ralph Bonner - 3500

High-Tech Video Delivers High-Tech Courses

The doors to the little tan schoolhouse, Bldg. 856, have been open for a semester. And Sandians have been able to walk in and register, with management approval, for any of two dozen technical courses offered via Instructional Television (ITV) — that's mostly "live" classes and a few taped ones.

The new Education and Training facility represents a major milestone in on-site TV instruction, begun at the Labs in the spring of 1985 when the first remote class — on robotics — was beamed "live" from UNM (see "INTEC Supplies On-Site Demand").

The latest ITV productions are a far cry from the good old days at Sandia — of even two years ago — when a video camera basically just focused on a "talking head" or chased the instructor around the blackboard in Bldg. 892. Then everybody got the same information off the monitor. There was no chance to brake the speaker or to ask questions.

Clustered Classrooms

The new complex changes all of that. A cluster of three classrooms around a video control room, the complex includes such things as 20 independent monitors, all in one room.

"This means, in theory, that 20 different courses can be offered at the same time — a student could take any one of them," says Stan Love, supervisor of Education and Training Division II 3522. Each



THOSE SCISSORS ARE REAL, not papier-mâché, as Danny Brown (3520) and Ralph Bonner (3500) can attest to. The grand ribbon-cutting was the crowning ceremony in the February opening of Education and Training Building 856. Tours of offices and the three ITV classrooms were held before and after the event.

monitor has its own headset to avoid the problem of 20 teachers talking in one classroom.

And the student is not a complete captive of a faraway instructor anymore. He or she can ask questions by telephone — soon to be replaced by a microphone system. "The audio half of ITV technology still needs some work," says Stan, "but the video half is working smoothly."

Another classroom is more basic — outfitted

with full-production equipment for teaching, taking, and taping one class at a time.

The third classroom is a technological marvel of advanced training. Dubbed the Computer Education and Training Facility (CETF), it has its own computer system (a MicroVAX), 21 personal computers (PCs), and four cameras to track the instructor's every move. The monitors on the PCs are also individually addressable (as in the first room) so students can work separately — in this case, on different programming problems. Or students can learn by doing; that is, they can copy at their own workstations whatever the instructor is doing, as shown on two large projection screens in the front of the room.

The CETF is evenly shared — everything from the design of the room, through purchase of equipment, to scheduling — by Stan's group and Computer Consulting and Training Division 2614. Gary Shepherd (2614) is the training system architect. Don Morrow is the video system designer, and John Dillinger (both 3522) is responsible for the MicroVAX and digital control systems.

Fifteenth Anniversary

INTEC Supplies On-Site Demand For Continuing Ed

The ITV concept of bringing university coursework right inside the Labs is not new. Sandia Albuquerque's been doing that since 1972. That's when the INTEC (IN-hours Technical Education Courses) program began in Bldg. 892.

"INTEC is one of the primary means we have to update the capabilities of our technical staff," says Harry Saxton (2900), chairman of the On-Premises Education Committee (OPEC), which oversees the INTEC program. "Sandians need on-site education to satisfy the technical demands of ongoing and future missions and assignments."

INTEC was an immediate boon to many Sandia students. It reduced time spent away from the job and travel to universities around the country to take specialized courses.

Honing that Cutting Edge

In '84-'85, the INTEC umbrella covered some 60 non-degree-related courses a year, according to Stan Love (3522). About 30 of them were developed at Sandia — for specific Sandia needs — and were usually taught by Labs experts on site. The other half were contracted out, usually to individuals also teaching at UNM. These courses were more traditional — graduate- and undergraduate-level math, physics, and engineering.

That academic year, 966 Sandians took and completed INTEC courses — with weapons-related topics the most popular, nuclear engineering in second place, and computer science in third.

But a cost study of Sandia's educational program that same year concluded that ITV classes — interactive broadcasts or tutored video courses — could readily replace some of the Sandia-developed INTEC classes (see LAB NEWS, July 19, 1985). The Educational Program Review resulted in the formation of the ITV Management Subcommittee, with Herm Mauney (7260) as

chairman. The ITV group set out to devise a plan for ITV and then implement and evaluate it by 1990.

ITV in Midstream

Today Sandia is midstream in its five-year experiment with ITV. INTEC had a record last year: More than 60 percent of the courses were taught by non-Sandians — mainly through ITV (30 courses). The numbers for this year show a slight increase: The spring semester's ITV calendar shows 18 full-course broadcasts from UNM and five from NTU.

"ITV should be clearly cost-competitive with Sandian-taught courses when the three years are up," Herm notes. "Already we're getting a wider selection of high-quality courses — and the cost has dropped since 1985."

The number of Labs-developed courses has been cut already — by a third. That means fewer Labs technical experts have to spend time preparing for classes, lecturing, and grading papers. The "Sandia 20" that remain — courses such as Dick Brodie's (400) on weapons and Paul Cooper's (7132) on explosives — are too specialized for a university to offer and so will continue to be taught live and on site.

The number of contracted (non-ITV) courses has remained about the same. That leaves the ITV courses to fill in any knowledge gaps. "As demand increases for new courses — and as Sandia's missions and projects change — the supply will edge up to 40," says Herm.

Will it stay at 40? "Right now, my committee is focusing on getting those 40 or so ITV courses going — and on ironing out any kinks in the system," he continues. "We'll take an overall look at the ITV program in 1990. Then we'll report to the Sandia Education Committee, which will decide whether ITV's to become more selective or to expand."

Video-Wise Instructors On Call

Where do the ITV broadcasts to Sandia originate? At UNM, primarily. These are relayed via the university's microwave receiver on Sandia Crest. One of the antennas just outside Bldg. 856 picks up the signals. And voilà — instant off-campus education.

Since that first robotics broadcast, UNM has gained a crew of video-wise instructors. Seventeen have already broadcast live from UNM classrooms, according to Stan.

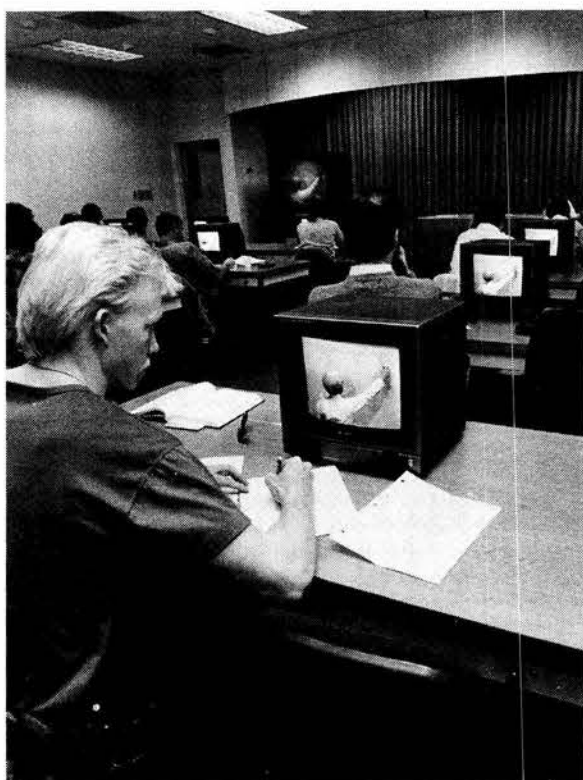
The second antenna has a higher reach. It's steerable toward any satellite that happens to be in the skies overhead. Satellite receiving systems in Bldg. 856 pick up those (by-subscription-only) broadcasts: five classes a semester from the National Technological University (NTU, a group of 21 universities throughout the country), teleconferences from the Institute of Electrical and Electronics Engineers (IEEE), and seminars from the Association for Media-based Continuing Engineering Education (AMCEE) or from private companies such as Texas Instruments (TI).

Most classes are regularly taped and stored for about a month. These can then be played back (often at the Individualized Learning Center) for make-up sessions.

The video control console has an added teaching tool for instructors: VideoShow — graphics software that allows instructors to prepare electronic slides (pie charts, flow charts, titles, the works) on IBM personal computers and then to present the slide show by remote control.

As of April, ITV classes began traveling outside the Education and Training Bldg. Fiberoptic

(Continued on Next Page)



INSTRUCTOR'S FAR AWAY, but his image bounces on: It can be broadcast from UNM to the Labs (via Sandia Crest) — and later reviewed on videotape. A selection of UNM (and NTU) courses is taped and stored at Sandia for proctored make-up classes or individual playback sessions.

(Continued from Preceding Page)

High-Tech Video

transmitters and receivers in the control room were connected to Bldg. 891 and the Tech Transfer Center (TTC). Plans are for signals to be routed to a few more sites, including Tech Area III, to bring courses even closer to the students' workplace (see "ITV: A Useful Adjunct," next page).

Varied Sources of Best Courses

In time, it may be possible to alternate "home" classrooms. That's worked once already — in an improvised experiment in which a UNM class on circuit analysis was broadcast from Los Alamos National Laboratory and watched by UNM and Sandia students on their ITV monitors.

"In fact, UNM professors may want to teach for a day or so at each of the labs to get to know their ITV students personally," says Stan. "And ITV students usually want to meet their teachers at least once." In such a case, Sandia would beam the course to the rest of the class — students at UNM's Instructional Media Center, in private corporations, and at other labs.

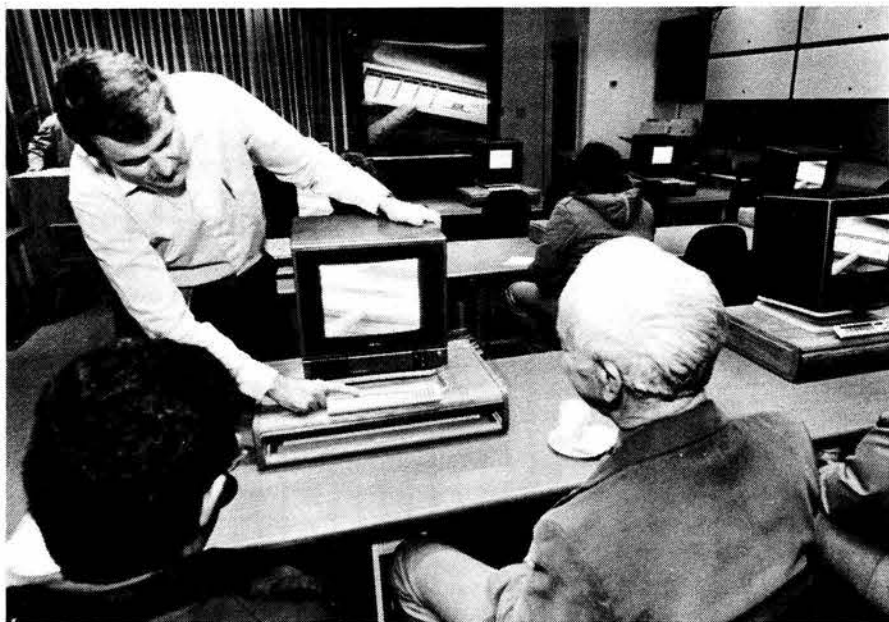
Does Sandia have plans to broadcast its own "live from the Labs" programs? "Only within the Labs," says Herm Mauney (7260), chairman of the ITV Management Subcommittee. "We're not interested in originating classes, except for those that have unique interest to the Sandia staff."

The whole ITV program of technical courses will be improved over the next five to 10 years. "The course of change in technical fields is so swift that many degrees can become dated in a few years," notes Herm. "So the ITV courses are one of the primary means we use to upgrade our technical staff."

"We're trying to bring in a wider selection of high-quality courses," he continues. "One of the best ways of doing that is to go to the sources of the best courses available." That may mean bringing in classes from across the nation — such as physics courses from Berkeley or MIT.

Plans call for ITV delivery of 40 different courses a year by 1990 — and for the same or fewer dollars than it would take to continue having Sandians prepare and teach them.

Also, the tumbling prices (recently down by 90 percent) of video-compression devices for commu-

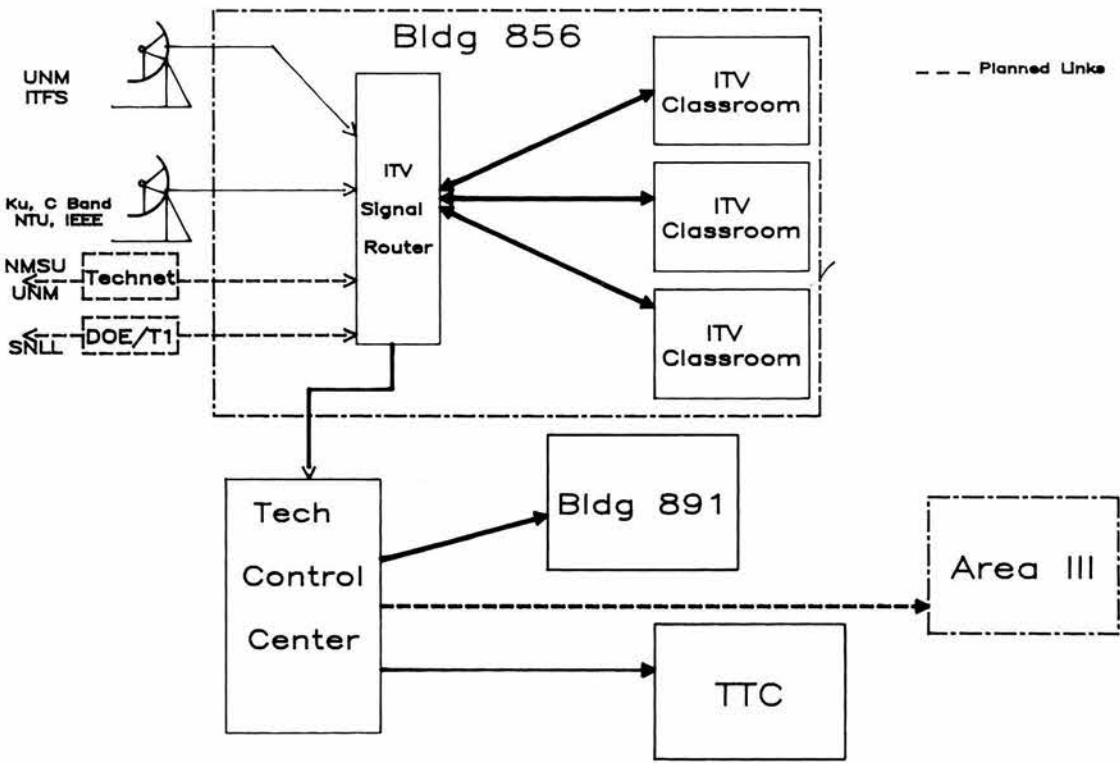


COMPUTER ARCHITECT Gary Shepherd (2614) demonstrates a video camera homing in on a PC keyboard in the Computer Training and Education Facility in Bldg. 856. The terminals — here in a video mode — and the Barco screen in the background have the same display.



CHARACTER GENERATOR for making titles is only a fraction of the features available to Yvonne Gurule (left) and Barbara Staley (both 3522), ITV operators at the Control Room console.

SNLA's Instructional Television System



ELECTRONICALLY GENERATED FLOW CHART of Sandia's ITV system shows both the existing links (solid lines) and some in the planning stages (dashes). From top left: An antenna outside Bldg. 856 (Education and Training, dots and dashes) picks up UNM's ITFS (Instructional Television Fixed Service, or microwave) signals from a Sandia Crest relay. Another antenna picks up satellite broadcasts from sources such as NTU (National Technological University) or IEEE. New fiberoptic links dedicated to Technet and DOE (nationwide, including a channel to Livermore) may be operational by the end of the year. Inside Sandia Albuquerque, signals can be routed to any of the three ITV classrooms — or relayed via the Tech Control Center to Bldg. 891 or the Tech Transfer Center (TTC). Area III will be connected next.

nications terminals are making a link to Sandia Livermore practical — perhaps even this year. "For people in Livermore, that would mean access to the courses taught here," says Stan. "We, in turn, could arrange to relay to Albuquerque the EE courses that Livermore receives from Bay Area schools such as

Stanford and UC-Davis."

Such large networks are well on their way. Recently, a TI symposium on artificial intelligence (relayed by satellite) reached not only Sandians assembled in the TTC, but also an estimated 65,000 people at 1000 sites in 16 countries. ●ID

ITV: A Useful Adjunct to Education in NM

In time, ITV could do far more than update and modernize technical education at Sandia Albuquerque, according to Dick Schwoebel (1800), a participant in the ITV Working Group for New Mexico. "The resources Sandia has invested in an ITV link with UNM have already brought us an excellent return: a useful adjunct in the continued education of our staff," Dick says. Next, he sees ITV technology delivering education to and from other parts of the state.

"ITV is an innovative way of bringing education to students, instead of the other way around," he says. "And courses could be distributed to a variety of locations."

Dick points out that Sandia's ITV hardware is now part of an interactive video system that includes UNM and Los Alamos National Laboratory. And other hookups are sprouting elsewhere in the state. The interconnections are growing — as in other states — not yet by any master plan but in a dynamic manner.

"Sandia and UNM are conducting an experiment in education that could eventually have important implications for all of New Mexico," he notes. "The framework could someday evolve into a full-scale network of universities, laboratories, and industries."

Conduit of Opportunities

There are several ways of using the human resources and the ITV hardware already in place.

"Sandia, Los Alamos, and the other labs will continue to offer outstanding courses to their own people by tapping their key scientific and technical minds," Dick says. "Yet some of these experts have an alternate role as adjunct professors at UNM — obviously, they can reach a larger and wider audience through a statewide ITV network."

That audience could be large indeed — if "on campus" is redefined from a physical field around college buildings to an electronic one: any site that has a receiver, playback unit, and registration in an ITV program of courses.

"ITV courses are already being offered by UNM to Sandians and some employees of private industry in Albuquerque," he explains. "Such courses could, in time, be delivered to other employees who want to advance their careers. I'm thinking of people at the other laboratories in the state — Kirtland, Holloman, and White Sands."

Sandia's reaching out in new ways too. "The Labs will be linked up this summer with UNM and NMSU — through the Technet optical fiber system," Dick says. "And we'd like to use the fiber to link up eventually with Tech" — the NM Institute of Mining and Technology, in Socorro.

Programs Suitable to Corridor

Another concept is to help universities in New Mexico tailor technical programs of courses to regional needs. "For example, New Mexi-

co has never had a curriculum in materials science and engineering," says Dick, director of Materials and Process Sciences 1800. "Yet materials is an important 'enabling technology' — product-oriented companies need to draw on such expertise and be able to train their people locally. Such a curriculum could also attract high-tech industries to the Rio Grande Corridor."

Just last March, Riotech (an educational and research foundation headed by Tommy Thompson, a former AT&T VP) announced plans for a graduate program in manufacturing engineering. Starting next fall, UNM and NMSU will use an ITV link to jointly offer the courses.

"Riotech has also been interested in a curriculum in materials," says Dick. "With NMSU, UNM, Los Alamos, and Sandia combining resources, an excellent program of this kind could be developed."

Sharing Expertise

ITV, therefore, can deliver more efficient and effective education throughout New Mexico. And convenient education, allowing people to remain at their work location while they study.

Some important first steps toward unifying the networking effort were taken not too long ago. Representatives from universities, labs, and individual businesses such as BDM Corp., Intel, Signetics, and Sperry have been meeting since the spring of 1985 as an informal working group of potential ITV users and conveyors.

Take Note

Get a free ride out at the Public Workshop on Electric Vehicle Technology on June 13 at the Marriott Hotel. Registration is at 8:30 a.m., followed by speakers from PNM, Sandia, and DOE. Dick Bassett (2564) is one of the speakers on national research activities. Rides in and exhibits of the electric vehicles will be available at the end of the workshop. Admission is free; call 848-2331 to reserve your tickets or to obtain more information.

* * *

The UNM College of Engineering recently announced that, for the first time, the required course titled Chemistry 121 will be offered during the evenings during the fall semester. Roy Caton will teach the lecture course on Tuesdays and Thursdays from 7 to 8:15 p.m. If you're interested (and if you've already been admitted to the College), go to UNM's Registration Center and provide the call number (05155) and the section number (003); you will also need to select one of the several chemistry lab courses taught in the evenings.

* * *

A Jefferson Meeting, co-sponsored by the New Mexico Endowment for the Humanities, APS, and Project '87, is scheduled for May 29 and 30 at Valley High School Performing Arts Center. The meeting, part of an effort to honor the bicentennial of the U.S. Constitution, will focus on questions such as "Should we abolish the Electoral College and elect our Presidents directly?" or "Would our Presidents be less concerned with re-election, and thus be more effective leaders, if the Constitution were amended to give them a single, six-year term?" Call Chris Webb on 345-9021, ext. 253, for an application and/or more information.

* * *

May is Better Hearing and Speech Month. The New Mexico Speech-Language-Hearing Association is joining other state associations in a national campaign to inform the public about speech and hearing disorders. On May 30 from 1 to 4 p.m., call the hearing and speech hotline numbers (262-2672 and 883-9116). For more information, write the New Mexico Speech-Language-Hearing Association, PO Box

4720, Albuquerque, NM 87196.

* * *

A benefit carnival for the family of John Carrillo, APD police officer killed in the line of duty, will be held June 13 at the NM State Fairgrounds from 8 a.m. to 4 p.m. Activities include hot air balloons, live music, food, games, celebrities, and horse rides. For more information, call 898-6823 after 6 p.m.

Recommended Viewing

"Black and White," a documentary about the Albuquerque Police Department, airs on KNME-TV next Tuesday, May 26, at 9 p.m. It's a hard-hitting, fast-paced film that makes one thing clear: Routine occurrences in the life of a street cop aren't routine for most of us. Though not a single shot is fired, the tension is there — as are reminders of potential violence — as APD officer Bill Kuchar answers typical patrol calls. Interspersed among the scenes is footage from the funeral of APD officer John Carrillo. Producers Dale Sonnenberg (brother of Bob, 7210) and Cindy Barchus accompanied Kuchar on patrol about three times a week over an eight-month period to get background info and film footage. "We tried for reality, not sensationalism," says Sonnenberg. They succeeded. Note: The 60-minute film contains some street language, so parental guidance is suggested.

July 1 is the deadline to apply to St. John's College for its fall semester graduate program, held evenings in Albuquerque and Santa Fe. Classes begin Aug. 1 and meet Monday and Thursday evenings. The curriculum is divided into four required segments: "Politics and Society," "Literature," "Philosophy and Theology," and "Mathematics and Natural Science." Classes on the "Literature" segment will be held at the Albuquerque Academy. For more information on the program, fees, and finan-



Here are a few current volunteer opportunities for employees, retirees, and family members. If you would like more information, call Karen Shane (3163) on 4-3268.

NEW MEXICO SKI TOURING CLUB needs help with flagging existing trails and identifying new routes in the Jemez on two Saturdays, May 30 and June 13. There will be additional summer outings, including day and overnight trips, to all parts of northern New Mexico for final trail checks, and to gather information for a new edition of a trail guide.

NEW MEXICO RESCUE DOGS program needs field personnel to increase its response capability on calls throughout the country. In addition to dogs and their handlers, field personnel are needed to help with communications, debriefing, etc.

NEW MEXICO SPECIAL OLYMPICS is a program of sports training and athletic competition for mentally retarded children and adults. The purpose of Special Olympics is to contribute to the physical, social, and psychological development of the mentally retarded. Through positive experiences in sports, they can gain confidence and self-image association with success. Volunteers are needed at the May 28-31 competition in Albuquerque to escort entrants to their assigned events, help with judging, coaching, scoring, tallying, etc.

cial aid, call Susan Bodenstein on 982-3691, ext. 226.

* * *

The 1987 Architectural Photo Contest, sponsored by the Albuquerque Chapter of the American Institute of Architects, is now accepting entries. The contest was created to promote awareness of Albuquerque architecture. Deadline is July 15. For more information, contact the local AIA office on 842-8744.

Supervisory Appointments

ALDRED STEVENS (DMTS) to supervisor of NNWSI Repository Engineering Division 6311, effective May 1.

Al joined Sandia in September 1961 as a member of the Environmental Test Division. He left in 1964 to attend graduate school and returned to Sandia in Livermore in 1968. In 1969 he joined the Shock Wave Physics group in Albuquerque where he worked on responses of materials to impulsive loads. In 1976 he transferred to the just-formed Fossil Energy Department.

In 1981 he joined Occidental Petroleum where he managed studies on synthetic fuels and oil shale technology. Al returned to Sandia in 1984 as a member of the NNWSI Projects Department where he became involved with planning and investigation in support of the nuclear waste disposal project.

He has a BS in mechanical engineering, an MS in applied mechanics with an emphasis in materials science, and a PhD in applied mechanics from Michigan State University. He is a member of the Society of Experimental Mechanics.

In his spare time, Al enjoys woodworking. He and his wife Lois have two children and live in the NE Heights.

* * *

JOHN WHITLEY to supervisor of Fusion Technology Division 6248, effective April 16.

John joined Sandia in August 1978 as a member of the Metallurgy Department where he worked on materials problems for magnetic fusion research. In 1980 he became a member of the newly formed Fusion Technology Division. He's been involved in fusion research since he joined the Labs.

He has a BS in nuclear engineering from Kansas State and a PhD in the same field from the University of Wisconsin. He is a member of the American Nuclear Society and the American Vacuum Society.

John is an officer with the Los Chavez Volunteer Fire and Rescue Department. In his spare time he enjoys gardening and camping.

John and his wife Janet have two sons and live in the Los Lunas area.

* * *

CAROLYN LANGE to supervisor of Payment Processing Section 154-1, effective May 1.

Carolyn joined the Labs in June 1978 as a member of the Financial Policy and Procedures Division. She was with the Property Accounting Division from



FROM LEFT: CAROLYN LANGE (154-1), AL STEVENS (6311), MIKE BOHN (6447), JOHN WHITLEY (6248), AND SHIRLEY WALLACE (132-1)

1979 to 1980 when she transferred to the General Accounting Division. In 1981 she moved to the Financial Systems Design Division. She joined the Budgeting organization in 1983 and returned to the Financial Systems Design Division in 1984.

She has a BBA and an MBA from UNM.

Carolyn's spare time activities include gardening, traveling, swimming, bicycling, and downhill skiing. She's president of the Coronado Ski Club.

She has two grown children and lives in the NE Heights.

* * *

MICHAEL BOHN to supervisor of Adverse Environment Safety Assessment Division 6447, effective May 1.

Mike joined Sandia in February 1984 as a member of the Reactor Systems Safety Analysis Division where he has developed methods and data bases for analyzing the effects of external events such as earthquakes and fire on reactor safety.

Before coming to Sandia, Mike managed the Seismic Safety Margins Research Program at Lawrence Livermore National Laboratory from 1980 to 1984. From 1973 to 1980 he managed the Fuel Rod Model Development Branch at the Idaho National Energy Lab. He also spent two years with Atlantic Research Corporation where he designed small solid-fuel rockets.

Mike has a BS in engineering mechanics from Virginia Polytechnic Institute and an MS and a PhD in applied mechanics from Stanford.

In his spare time, Mike enjoys white-water rafting and hunting. He is a NAUI-certified scuba instructor and has a private pilot's license.

Mike and his wife Cheri have five children and live in Corrales.

* * *

SHIRLEY WALLACE to supervisor of Systems Analysis Section 132-1, effective April 16.

Shirley joined Sandia in October 1971 as a secretarial trainee. She was a division secretary in Org. 1000 until 1978 when she became a service clerk in Security Standards and Investigations. In 1979 Shirley was an accountability clerk in Safeguards and Technical Security. She entered the MAS (now MLS) Training Program in 1980 and was reclassified to Member of Administrative Staff (MAS) in March 1983. Shirley was an administrative assistant in the Safeguards and Security organization from 1983 until 1985. She has worked in the Programmatic Support, Management Information and Results, and General Accounting organizations and, most recently, in the Customer and Supplier Accounting organization.

She has a BS in accounting from the University of Albuquerque and an MBA from Highlands University. Shirley is vice-president of the National Association of Black Accountants and a member of Sandia's Black Outreach Committee.

Shirley's hobbies include fishing, gardening, and sewing. She and her husband Vernon have two children and live in the NE Heights.

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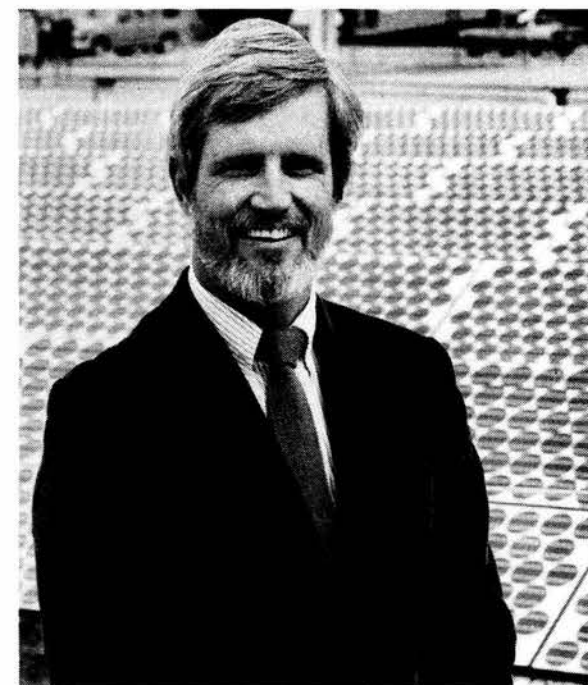
RAY HARRIGAN to supervisor of Intelligent Machine Systems Division 1414, effective May 1.

Ray joined the Labs in March 1974 as a member of the Solar Energy Division. He became a member of the Intelligent Machines Division when it was formed in 1983 and worked on robotics and artificial intelligence.

He has a BS in chemical engineering and a PhD in chemistry, both from UNM. Ray spent a year and a half in Brazil as a National Academy of Science Overseas Research Fellow while he was associated with Henry Taube of Stanford University. He was a research associate at Caltech before coming to Sandia.

Ray is a member of the American Chemical Society and Sigma Xi.

He builds small robot toys at home in his spare time and demonstrates them in local schools. Ray and his wife Lana have three children and live in the NE Heights.



RAY HARRIGAN (1414)

Welcome

Albuquerque

Bernadette Abeyta (22-2)
Karen Crowley (22-2)
Betty Fleming (21-1)
Janell Miller (22-2)
Barbara Reser (21-1)
Brenda Rogers (21-1)
Sally Sawyer (21-1)
Michael Sleeter (3531)
Margaret Valencia (22-2)

New Mexico

Loretta Helling (21-1)
Mary Helen Padilla (22-2)

New York

Sharon Sargent (21-1)

Ohio

Michael Carmel (6415)

Congratulations

To Pam (4010) and Al Goldberger, a son, James, April 28.

To Mishele and David (9233) Ek, a daughter, Monica Renee, May 2.

To Mary and Stephen (7841) Tomari, a son, Ryan Matthew, May 6.

Fun & Games

Tennis — The Sandia Tennis Association (STA) will hold the first tournament of the season on May 30-31 at the Coronado Club courts. Events include men's and women's singles and mixed doubles. Entry deadline is 4 p.m. on May 27. For details, call Fred Cericola (7542) on 4-3205.

* * *

Golf — The Albuquerque NFL Celebrity Golf Tournament is scheduled for June 4-5 at the Arroyo Del Oso Golf course. Join 36 NFL football players representing more than 15 teams including the Broncos, Cowboys, and Bears playing in this tournament to benefit cystic fibrosis. Player spots and tickets to the evening social functions can be reserved by calling Bunny Orsak on 255-7507.

Medical Corner

Alcoholism Drug Addiction, Co-Dependency: Closer to Home Than Most Think

by Lynne Judge (3330)

I'm available to talk to you — or to your organization — about alcoholism, drug addiction, and co-dependency.

Before you say, "But we're Sandians. We don't have any problems like that," check some facts:

- Alcoholism is an illness that afflicts about 22 million Americans, nearly 10 percent of the population.

- In addition, the abuse of and addiction to other drugs (illegal, prescribed, or over-the-counter) is epidemic in the nation.

- And people often become addicted to a combination of substances — alcohol and pills, marijuana and cocaine, etc.

- Each addict/alcoholic adversely affects about five other people, including family members, friends, and co-workers. These are what we call the co-dependents.

The number of people, then, whose lives are disrupted by alcoholism/addiction is staggering.

Each alcoholic/addict is impaired in some way. An alcoholic is impaired both while under the influence of alcohol and while going through alcohol withdrawal ("nursing a hangover"). A drug addict is impaired in the same way — while using or in withdrawal.

As I noted, many alcoholic/addicts use a combination of drugs. For example, they'll use one drug to counteract the unpleasant effects of withdrawal from another drug. Some drugs get them "up" and some bring them "down." Users try to hit upon the right combination to achieve a balance. This combining of drugs can not only impair their functioning but can be dangerous because of the synergistic effect of one drug on another — one plus one can equal seven, even thirteen.

But the alcoholic/addict is not the only one impaired. The co-dependent too can be impaired on the job. Worry, anxiety, and preoccupation caused by living through the crises caused by alcoholics/addicts can be debilitating. Co-dependents may try to help alcoholic/addict co-workers by covering up or "fixing" their dangerous, unsafe, or dishonest behaviors. In addition, the energy used to cover up or to fix a crisis can produce stress-related illnesses that interfere with job performance.

"But," you think, "this can't be much of a problem at Sandia. After all, we screen people so well before we hire them, and we have such a high-caliber, well-trained bunch of people."

Think again.

Some studies have shown that the higher people are on the socioeconomic scale, the higher the incidence of alcoholism and drug addiction. Other studies suggest that, for some reason, alcoholics and addicts as a group test out to have IQs that are five percent higher than the general population. And where you find alcoholics/addicts, you find co-dependents. Yes, we have them all right here at Sandia.

Nevertheless, it's hard for any of us to acknowledge that we have these problems in our offices and workplaces. Most of us perceive drinking as a relatively harmless social activity. Some may condone the use of drugs as well. But these activities constitute a serious disease for nearly 10 percent of the nation's population, and it's doubtful that Sandians are any less affected.

The problem is compounded because most of

(Continued from Page One)

Bond Drive

the "Great American Investment" (see "The Pluses of Bonds" story).

Other Advantages Too

Dick reminds us that the bond umbrella is a fine way to keep dry on retirement rainy days or put-the-kid-through-college rainy days. "Since the interest isn't taxable until you cash bonds in, people can stockpile bonds before retirement, then cash them afterwards at what will probably be a lower tax rate because of a lower income level," Dick points out.

"You can also convert Series EE bonds to Series HH bonds, for which holders receive a semiannual interest check," he continues. "That's an advantage for retirees or anyone else looking for current income from their investment." (Series HH bonds are larger, with denominations starting at \$500; they pay the same interest rate as Series EE bonds. They can be purchased with cash or a rollover of EE, E, or H bonds.)

As for those college costs, one thing is sure: They will *not* decrease in the future! Putting aside bonds (earmarked for school expenses) on a regular basis from the time a child is quite young just might make the difference in sending a student off to the school of his or her choice when the time comes. You can purchase the bonds in your name or, for possible additional tax savings, in the child's name with or without a beneficiary.

No Less than 6 Percent

Since the bond program was revamped in 1982 to make it more competitive, bonds pay a floating rate set every May and November at 85 percent of the average market rates on five-year Treasury securities during the previous six months, but no less than 6 percent if they're held five years.

Redemption value on a bond held five years or

The Pluses of Bonds

- **Tax advantages** — no state or local taxes on interest earned; federal tax deferred until bonds are cashed or mature
- **Safety and security** — free replacement of bonds if they're lost, stolen, or destroyed; fully backed by the U.S. government
- **Flexible** — available in eight denominations ranging from \$50 to \$10,000 (you pay half the Bond's face value)
- **Affordable** — can join program for as little as \$1 a week (if weekly paid), \$2 each pay check for semi-monthly paid, or \$25 once a year (Bond-a-Year plan); no service charges to purchase or redeem
- **Guaranteed competitive earnings** — variable, market-based interest if held for five years; minimum interest rate of 6 percent

longer is determined as follows: The market-based rates for the 10 or more semiannual periods are averaged. The result, rounded to the nearest one-quarter of 1 percent, and compounded semiannually, is the rate paid on the bond. Purchase price plus bond earnings equals redemption value. The minimum rate (6 percent) applies only if the average rate falls below it.

"Obviously, that 6 percent floor doesn't compare to recent stock market gains, but it stacks up very favorably with current money-market rates," Dick points out. "And if interest rates, in general, move upward, so will the interest rate on bonds."

"The Bond Committee is confident that Sandians will continue their high rate of participation in the program this year," Dick continues. "That's as it should be — it's fitting for us as a national laboratory to respond so enthusiastically to the U.S. Savings Bond program. We also hope that employees will consider raising their *level* of participation as well, since all those bond advantages accrue much faster that way."

If you're not currently under the bond umbrella, your golden opportunity is now. ●PW

Death as an Everyday Event

by Arlene Price (3330)

"I used to think Memorial Day was a time for vacation and fun," said one Sandian to me. "But since I lost someone dear to me, it means something quite different. I realize that there are a lot of us out there who remember on that day the loved ones we lost."

To help us take stock of some of these experiences, Joan Guntzelman, a counseling psychologist, will present a noon-hour talk, "Death as an Everyday Event," next Friday.

When I asked Joan for some background on her presentation, she replied:

"There's an old saying that the only two things you can't avoid in life are death and taxes. The reality is that you *can* avoid taxes — though you may have to pay the consequences for such avoidance.

"The only thing none of us can truly avoid is death, and I'm not talking only of our own here: Before we die our final death in this life, we will have experienced death in many forms.

"Although we want to believe that things remain the same, we are constantly experiencing

death and loss and change in many dimensions of our lives: People leave us, jobs change or are lost, we age, some hopes and expectations never work out, our children grow up and leave home, we suffer sickness and death, we find ourselves replaced by others.

"These are just a few of the types of death we may face in life. No life exists without them. We may experience a great deal of sorrow and distress as a result of such experiences.

"Yet every loss or death we experience presents us with the opportunity to become stronger, healthier, and more complete in our lives. How these hard times affect us, and how we handle them, have a lot to say about how life goes on for us, what kind of people we become. We all have choices as to how we go about dealing with the hard things in our lives, and, consequently, how we are creating ourselves."

Please join us on Friday, May 29, from noon to 12:30 in the Technology Transfer Center for this Medical-sponsored talk. Spouses are welcome.

us want to help our family members, friends, and co-workers; that's only human. But for the co-dependent, "helping and fixing" becomes a pathological obsession. For the sake of sanity and survival, we have to relinquish the ideas that alcoholism and drug addiction — and co-dependency itself — are disgraces to be hidden. We must acknowledge that all three are diseases from which people can recover.

If you would like to learn more about these issues, please call me on 4-3993.

Fault of Salton Sea



From the shores of a sea that isn't supposed to be here, Thelma Young catches a strange African fish that isn't supposed to live in salt water. "And now they say we're not supposed to eat the fish, either," says Mrs. Young, shaking her head.

This is the Salton Sea. To some, it is a world-class sport fishery, a home for the 30-plus pound croaker called the orange-mouth corvina and a biological treasure-trove that is worth spending millions of dollars to save. To others, it is a polluted ocean full of tainted fish that isn't worth the bother. No one disputes, though, that the 360-sq.-mi. landlocked sea is growing saltier every year.

Ken Wells, *Wall Street Journal*

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

Deadline: Friday noon before week of publication unless changed by holiday. Mail to Div. 3162.

Ad Rules

1. Limit 20 words, including last name and home phone.
2. Include organization and full name with each ad submission.
3. Submit each ad in writing. No phone-ins.
4. Use 8 1/2 by 11-inch paper.
5. Use separate sheet for each ad category.
6. Type or print ads legibly; use only accepted abbreviations.
7. One ad per category per issue.
8. No more than two insertions of same ad.
9. No "For Rent" ads except for employees on temporary assignment.
10. No commercial ads.
11. For active and retired Sandians and DOE employees.
12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

- POWER ROTARY LAWN MOWER, w/ grass catcher, \$65. Jones, 299-9032.
- CLOTHES DRYER, 120 VAC electric portable w/casters, Maytag Model DE50, \$20 OBO. Kirson, 293-5284 after 6.
- SPANISH-STYLE COFFEE TABLE, handcrafted, 28" x 51" x 17", \$60; two 13" B&W TVs, \$25/ea.; playpen, \$3; golf clubs (three woods), \$45. Krahling, 268-8126.
- POP-UP CAMPER, '84 Palomino Pinto, loaded, includes awning, battery, car mirrors, and spare tire. Jones, 881-6006.
- CHAIN LINK FENCE, 4' high, 30' long, w/one 3'-wide gate, all posts and top railing included. Padilla, 831-2114.
- VERTICAL TRACTION UNIT, Gravity Guide, w/boots, used one month, cost \$300, sell for \$100. Bass, 884-8491.
- BABY CARRIER, Snuggli 2, soft blue denim, adjustable pouches, holds baby in front or back, \$19. Barr, 821-5870.
- HOTPOINT HEAVY-DUTY WASHER and electric dryer, \$300/pair. Maenchen, 298-9496.
- PUPPY, female Keeshond-cross, born March 12, years for price of shot and lots of TLC. Finley, 281-2826.
- TWO OVERSTUFFED ARMCHAIRS, new, swivel on rollers, brown vinyl, \$100/ea.; nylon Oriental area rug, Kerman design, 6' x 9', fringed edges, \$50; foam carpet pad, 6' x 9', \$10. Paul, 299-6387.
- FAMILY BOARD GAME, Rand McNally's "Destination: Vacation," ages 8-adult, new. Wagner, 293-3211.
- ULTRALIGHT, Eipper Quicksilver, w/ Cayuna 430cc 2-cyl. engine, instrumentation, radio, helmet, pickup carrier, \$1000 cash. Vaughn, 298-5919.
- EIGHT COCKER SPANIEL PUPPIES, born April 23, buff and champagne, females \$75, males \$60. Faculjak, 898-6502 after 5.
- SONY TV, KV 1914, 19", color, \$200 OBO. West, 242-2561.
- HOMESTEAD HOUSE SOFA, brown print w/rust and blues; Drexel end table, \$500 for both. Boozer, 293-1348.
- PING-PONG TABLE, folds and rolls, \$40; air conditioner, refrigerated air, window-mount, vertical, 10K BTU, \$150. Christensen, 884-8249.
- WATER BED, king-size, solid oak, w/bookcase headboard, 4-drawer pedestal, cost \$1800, sell for \$850. Dobranich, 298-4547.
- MOUNTAIN TENT, 9' x 9' wall tent, 4 fold-up stools, air mattress & pump, lantern, stove, topographical maps. Buchanan, 299-7487.
- FREEZER, \$200; child's desk & chair, \$30 or will trade for animals or feed, need a duck and a goose. Lackey, 869-9333.
- STEREO RECEIVER, Harmon-Kardon, \$55; humidifier, \$7; external modem, 300/1200 baud, \$45; Keytronics keyboard for IBM PC, \$15; 3-way lamp, \$7. Robinson, 293-7231.
- HITCH, class III frame mount for pre-1986 Dodge vans, \$75. Olman, 884-4663.
- SEARS HEAVY-DUTY WASHER, \$100; twin bed w/mattresses (never used), \$75. Connolly, 266-4991.
- SCANNER, Bearcat, Model 838, 16 channels, keyboard-programmable, \$100; lawn mower, Sears, 20" rotary, \$50. Singleton, 299-1613.
- WROUGHT IRON VEHICLE GATES, ornamental, 16', \$175. Rea, 296-4620.
- B&W TV, 5", 3-way 110, battery, 12V DC, \$50. Rainhart, 821-3690.
- UTILITY TRAILER, 4' x 7'; 6-ply tires w/spare; lights and can carriers, \$225 OBO. McCarty, 823-2926.
- SOLID WOOD TABLES: 2 end, cocktail, and corner, blond wood, \$110. Bushmire, 294-2054.
- DOGHOUSE, 25" W x 36" L x 36" H, double-walled, insulated, sloped composition roof, free, you pick up. Williams, 397-1807.
- EVAPORATIVE COOLER, side mount, 4400 cfm; 3 chairs; blinds; lamps; child's scooter and bike; drapes, rods, and blinds. Schowers, 822-8494.
- 5th-WHEEL TRAVEL TRAILER, '81 Aluma Lite, 26', AC, awning, antenna, double bed, w/hitch, \$8950. Gregory, 344-1436.
- OSCILLOSCOPE, 545A Tektronic, works, \$75 OBO. McCoach, 298-5960.
- DRAFTING MACHINES: Universal, \$50 Vemco V-Track, \$100; drafting table, \$85; file cabinet, 5-drawer legal-size, \$60. Davie, 296-3950.
- 125 HP JOHNSON OUTBOARD MOTOR, w/controls & power tilt, \$1500 new, steel-belted radial tire, VW, P205R-15, \$25; 25" RCA TV, Color Track II, w/remote control, \$225. Longfellow, 299-7062.
- UPRIGHT FREEZER, Whirlpool, 21 cu. ft., 6 yrs. old, \$200. Castelluccio, 294-3612.
- KITCHEN APPLIANCES: 36" Corning 3 + 1 cooktop, \$100; Sears Best undercounter dishwasher, \$50. Torneby, 881-7170.
- HARD-WALL TRAILER, '74 Jayco Jay-Runner, 13-1/2', 2-burner stove, Porta-Potti, ice box, sleeps 4, \$1800. Rogers, 881-4721.
- ROLL BAR & BRUSH GUARD for minipickup, engine stand, swing set, assorted Ludwig drums. Archuleta, 821-5405.
- COFFEE & END TABLES, \$65; dressmaker's form, \$15; evaporative room air conditioner, \$15; single-size bed frame, \$10; utility table, \$10. Meyer, 296-9066.
- ELECTRONIC ORGAN, Thomas, two 37-note keyboards, bench included, \$495 OBO. Brewster, 884-8312.
- LIGHT-DUTY SHEET METAL BRAKE, 14' x 15", with folding/seaming attachment. Palkovic, 292-5582.
- COMPAC COLOR FILM DEVELOPER, good for parts, \$45; twin mattress, box spring, frame, \$30; twin/full metal bed frame. Ottinger, 296-3526.
- BENCH SEAT for van, 4-passenger, removable, \$35 OBO. Rutledge, 821-3048.
- BALDWIN STUDIO PIANO w/bench, walnut, 2 yrs. old, \$2200 OBO. Sherman, 292-3297.
- YUCCA PLANTS, free for digging, 1811 Morningrise Pl. SE. Brinkley, 255-2783.
- POWER SUPPLY, 40V-500MA, adjustable, constant volts, current limited, solid state, Varac, w/meter, chassis punches; couch, chair, \$75. Stuart, 299-9190.
- REMINGTON RIFLE, model 600, 243-cal., recoil pad, sling, Weaver variable-power scope, case, \$250. Parks, 884-7475.
- SIDE-BY-SIDE REFRIGERATOR, Kenmore, harvest gold, 22 cu. ft., 4 yrs. old, \$450; Whirlpool gas range and hood, copper-tone, \$175 OBO. Mayer, 299-8524.
- ELECTRIC LAWN MOWER, Sunbeam, 19" cut, used about 6 times, 3-hp motor, w/catcher, \$110; '64 & '67 Triumph engine parts, \$100/all. Skogmo, 294-0133.
- ANTIQUA PRINTS, private collection, European restrikes & originals, 15th to 19th century, from \$20 to \$400/ea. Schelby, 268-8928.
- ELECTRIC TROLLING MOTOR, Shakespeare model 603, \$55. Schroll, 299-9142.
- GE ELECTRIC RANGE, self-cleaning w/window, harvest gold, w/matching vent hood, \$280/both. Sallee, 296-9116.
- '82 JAYCO CAMPER, fits mid-size pickup truck, pops up, sleeps three, \$2000. Foltz, 291-0051.
- BENCH SEAT for '86 Ford XLT Lariat, blue, \$225 or trade for Bird model 43. Moore, 294-5646.
- COLECO POOL, 12' x 3', new liner, solar cover, pump, filter, ladder, cleaning tools, \$75; Creative Playthings double easel/chalkboard, \$20. Glaser, 293-8110.
- ANTIQUA SECRETARIAL DRESSER, mahogany and oak, glass-enclosed shelves, 3-drawer desk. Atkins, 298-5762.
- TRAILER MIRRORS, Sender mount, \$30; transmission oil cooler, \$15; Sears Craftsman router, \$20. Ezell, 821-1768.
- DISHWASHER, convertible, Westinghouse, ran one month past six-month warranty, needs new motor or timer, \$100. Hernandez, 268-5000.
- LOG SPLITTER, heavy-duty, gas-powered, \$600 OBO. Gentz, 281-5497.
- CRAFTSMAN 10" RADIAL ARM SAW, w/attachments, \$225. Railey, 898-0519.
- TWO BF GOODRICH TIRES, belted CLM, P175/80B13, never used, \$40/pair. Kopczewski, 821-5081 after 6.
- ROOF RACK, holds 2 bicycles in sliding trays, includes extra trays to hold 4 pairs of skis. Lagasse, 293-0385.
- DOG HOUSE for small dog, free if you move it. Jones, 255-7924.
- CAMPING TRAILER, '73 Holiday, 22', self-contained, AC, awning, electric brakes, \$3950. Olson, 292-4245.

TRANSPORTATION

- '76 CHRYSLER CORDOBA, cruise, tilt, AM/FM cassette, \$800. Pfeiffer, 299-3951.
- '77 DATSUN 280Z, AM/FM cassette, AT, AC, new tires and paint, \$3250 OBO. Hutchins, 884-3214.
- '81 BUICK RIVIERA, loaded, electric sunroof, 41K miles, emerald green. Arana, 299-1214.
- '83 OLDS. CUTLASS SUPREME, V-8, cruise, tilt, AC, PS, PB, AM/FM cassette, Michelins, \$3800. Detorie, 821-4230.
- '75 MUSTANG, 4-spd., 74K miles, \$1200. Verzi, 299-7028.
- '86 FORD AEROSTAR XL, 5-spd., rear AC, PS, PB, V-6, AM/FM tape. Newell, 299-3236.
- '72 FORD PICKUP, short bed. Eisenberger, 877-7041.
- '80 FORD FAIRMONT, 4-dr., 6-cyl., AT, AC, new tires, \$1200. Clevenger, 888-0201.
- '63 CHEVY II, 4-dr. sedan, needs panel work, runs, \$400 OBO. Cronin, 265-5229.
- '82 HONDA PRELUDE, red, 27K miles, \$5925. Griego, 294-5438 after 6.
- '78 WINNEBAGO, fully loaded, on 3/4-ton Chev. truck (new motor), AC, coupe cab, \$6500. Shelton, 898-2723.
- '86 ISUZU PICKUP, 4-spd., AC, AM/FM, \$6000. Littlejohn, 823-2456.
- '72 CHEV. TRUCK, 350 V-8, w/Gustin Deluxe custom-built overhead camper. Nelson, 865-9516 evenings.
- '57 AUSTIN HEALEY 100-6, 6-cyl., convertible, needs paint and interior work, \$2800 OBO. Masquelier, 293-2776.
- '81 YAMAHA 400, needs repair, \$250 OBO. Wilde, 243-4209.
- '71 TRIUMPH 650cc, custom low-rider, has been stored, \$1500. Sanders, 298-7734.
- '84 DODGE CARAVAN SE, 2.6-litre engine, 7-passenger seating, AT, PS, AC, AM/FM cassette, more, \$8500. Mowry, 299-2526.
- '84 VW SCIROCCO, 5-spd., AC, cruise, AM/FM cassette, transferable warranty, \$6200. Bryant, 256-1110.
- '83 SUBARU SW, cruise, AC, AT, electric windows, new tires, \$4950. Lackey, 869-9333.
- '80 YAMAHA XS 400, w/helmet, battery charger, and cover, \$300 OBO. Barbera, 275-2562 after 5.
- '64 MERCURY COMET CONVERTIBLE, new top and upholstery, rebuilt engine, \$3000. Crawford, 883-5545.
- '78 MUSTANG II, 4-spd., green & white, AM/FM cassette, white seats, radial tires, one owner. Otero, 255-4066.
- '75 AUDI FOX, 4-dr., FWD, AT, AC, AM/FM stereo tape, new radials and battery, original owner, \$1250 OBO. Drotning, 294-4807.
- '79 CHEV. CAPRICE, fully equipped, original owner, 48K miles, \$3200. Crawford, 881-3812.
- '74 VW SUPERBEETLE, \$1300. Walk-up, 822-9450.
- '81 BUICK SKYLARK, 4-dr., 4-cyl., light tan. Luikens, 884-1172.
- '67 VW CAMPER VAN, rebuilt 1600cc, stove, ice box, sleeps four, \$3000 OBO. Armijo, 298-9443.
- '80 VW SCIROCCO, 90K miles, Jensen stereo, Bilstein shocks, Pirelli tires, 4-spd., metallic gray/red, \$2500. Crenshaw, 296-8948.
- '82 PLYMOUTH HORIZON, one owner, FWD, 4-dr., 4-spd., \$1800 OBO. Behe, 281-2735.
- '87 MAZDA B-2000 PICKUP, bright red, short bed, 5-spd., AM/FM cassette, 1K miles, \$6500. Melbourne, 884-6437 or 822-0169.
- '75 SUZUKI RE-5 CLASSIC, rotary-engine road bike, 10K miles, \$995. Grace, 266-8817 after 5.
- '81 HONDA CM400, one owner, extras, \$575. Robertson, 293-1007.
- '68 JEEP WAGONEER, 4-WD, Buick 350-cu.-in. V-8, AT, original owner, AM/FM cassette, \$1750 OBO. Hochrein, 299-5225.
- '67 VW BUG, rebuilt engine, steel-belted radial tires, AM/FM tape, 29 mpg, \$950. Gear, 344-2009.
- '77 CHRYSLER LeBARON, AM/FM cassette, AC, PS, new tires, less than 50K miles. Polito, 298-3859.
- '84 DODGE RAM CHARGER, 4 x 4, V-8, AT; '83 Chev. Blazer, V-8, 4-spd. AT, 4x4, \$6500/ea. Brinkley, 344-5334.
- '55 FORD 1/2-TON PICKUP, rebuilt 272 V-8, new brakes, U-joints, best offer. Stuart, 299-9190.
- '82 MERCURY ZEPHYR, 4-dr., AC, AM/FM tape, AT, tilt, cruise, 58K miles, vinyl top. Dillon, 256-0076.
- '85 DODGE D-50 PICKUP, 24K miles, sliding rear window, chrome bumper, full-size spare, 2.6-litre engine. McConnell, 831-0471.
- '86 FORD ESCORT, 2-dr., metallic gray, 19K miles. Aguirre, 293-9604.
- '82 HONDA GOLDWING, \$4500; '82 Honda Odyssey, \$1100 OBO; '83 Honda CR 480, never raced, \$1100 OBO. Gilbert, 898-2605.
- GIRL'S BICYCLE, 20", Huff, blue, \$30. Glaser, 293-8110.
- '79 MERCURY CAPRI, V-8, AT, AC, new battery, brake job, recent tune-up, \$1800. Maloney, 821-6661.
- '81 VW VANAGON, 7-passenger, AM/FM cassette, \$4900. Todd, 344-9015.
- '69 MERCEDES 250, one owner, AC, 4-spd., light blue, service records, \$4000. Edgerly, 898-2983.
- HONDAMATIC STREET TWIN MOTORCYCLE, 400cc, AT, electric start, windshield, \$550. Ewing, 268-6920.
- '78 SCIROCCO, new tinted windshield, metallic silver finish, seat covers, and dash. Stixrud, 298-0478.
- '75 MERCEDES BENZ 280, full power, \$5800 OBO. Bottomly, 344-2137.

REAL ESTATE

- 2-BDR. MOBILE HOME, 1 bath, 14' x 75', set up in local park. Filip, 884-0526.
- 2-BDR. MOBILE HOME, '83 Tidwell (Western Palace), in NE park, 2 baths, master bedroom suite w/extra-large tub and double sinks, modern kitchen, special features, \$25,000 OBO. Littlejohn, 823-2456.
- 2-ACRE LOT, Los Lunas, near river, trees, underground utilities, horses permitted. Hart, 821-4455.
- 10-20 ACRES IN MOUNTAINS, north of I-40, 75 miles from SNL, pine-covered, road, \$8000-\$10,000/acre, negotiable. Sanders, 298-7734.
- HOME on 1-1/2 acres, wooded, view of Sandias, 2-car garage, workshop, storage. Tedesco, 281-5318.
- 3-BDR. BRICK HOME, 2400 sq. ft., 1-3/4 baths, new roof, enclosed entries, sun room, paved play court, fully landscaped, RV yard, \$119,000. Hughes, 299-6674.
- 3-BDR. HOME, LR, den w/FP, 2 baths,

- workroom, laundry room, near Base, 1650 sq. ft., \$69,500. Barger, 262-0143.
- 2-BDR. MOBILE HOME, Town & Country, in adult park, 14' x 65', 2 baths, 10' x 20' patio cover, new cooler, extras. Luikens, 884-1172 after 4:30.
- 2-BDR. MOBILE HOME, 14' x 65', 1 bath. Sanchez, 877-5240 after 5.
- 3-BDR. MOBILE HOME, 14' x 70', 1-1/2 baths, low down, take over payments (\$180), available June 1. Rayborn, 294-2052 after 6.
- 3-BDR. CUSTOM HOME, 1-3/4 baths, 1810 sq. ft., great room w/FP, neutral colors, Academy Hills, \$112,500. Rutledge, 821-3048.
- 2-BDR. TOWNHOUSE, 1-1/2 baths, single garage, auto sprinklers, fenced yard, \$43,000. Schindewolf, 831-1940.
- 10 ACRES, electricity, ponderosa pine, low down, 6%, \$10,000, Box 1185, Grants, NM 87020. Jeys, 1-285-5931.
- 4-BDR. MOSSMAN HOME, 2 baths, LR, family room w/FP, double garage, pitched roof, 2350 sq. ft., \$145,000. Ezell, 821-1768.
- 10 ACRES, So. Hwy. 14 & Raven Rd. area, with 14' x 74' 3-bdr. mobile home, 2 baths, terms. Gentz, 281-5497.
- 3-BDR. HOME, Westgate, 1260 sq. ft., 1-3/4 baths, pitched roof, fully landscaped, 2-car garage, \$62,900. Russo, 821-5502.
- 3-BDR. MOBILE HOME, east mountain area, active solar system for home/water heating, appliances, wood-burning stove. Martinez, 888-3067.

WANTED

- HOUSE-SITTING for visiting professor and wife, from June 7-20 and/or July 12-25, some flexibility in times possible. Gerardo, 298-4219.
- ROOMMATE to share 2-bdr. house in quiet SE Heights neighborhood, yard, laundry, storage space, \$165/mo. plus 1/2 utilities. Eley, 255-2617.
- TWO OFF-ROAD MOTORCYCLES, about 250cc and a 125cc, both same make, mechanically good, no junk. Marchi, 291-9681.
- TENOR SAXOPHONE, in good condition, and quality trumpet in excellent condition. Schaub, 265-0004 evenings.
- OWNER OR SHOP MANUAL for '72 Plymouth Fury. King, 299-8768.
- SMALL RV to rent for occasional use. Cronin, 265-5229.
- TO BORROW: transit and accessories, to make topographical map of church parking lot. Lehrer, 831-4360.
- OSTER DOG CLIPPERS, in good condition. Stoeber, 296-3717.
- '73 DODGE DART, 2-dr., green, slant-six engine, has Plains, Georgia, bumper sticker. Mowry, 299-2526.
- LOT CLOSE TO ALBUQUERQUE, for mobile home. Ottinger, 242-5944.
- POP-UP CAMPING/TENT TRAILER to rent for approximately 4 days beginning June 21 or 22, will pay reasonable rent. Freyermuth, 299-2053.
- TRAILER, small, enclosed luggage-type, to rent for the first 2 weeks of June. Atencio, 821-5295.
- WHEELCHAIR for small adult, blue, must have both legs extended. Kirby, 299-2948.
- RECOMMENDATIONS on contractors for interior wall modification and exterior retaining wall construction/landscaping. Lagasse, 293-0385.

WORK WANTED

- PAINTING, MOWING, YARD WORK, and odd jobs in the NE & SE Heights by college student, reasonable rates. Perrine, 293-1429.
- HOUSE-SITTING, college senior will house-sit, care for pets, etc. Andes, 268-8951.

LOST AND FOUND

- WOMAN'S EYE-GLASSES, prescription, faded blue case, found in parking lot north of "O" Street across from Bldg. 957 (Shipping & Receiving). Contact Lana on 4-5726.

Kick Off Summer Fun At Splash Bash on Monday

FISH GOTTA SWIM, and so do you — in the pool(s) at the grand opening celebration next Monday. There's no better way to spend your Memorial Day holiday — and to get yourself in that lazy, crazy summer mood. This one provides fun for the whole family from 11 a.m. to 6 p.m., including games (with prizes) for the kids, free balloons, clown entertainment, and DJ music for après-swim dancing. An a la carte BBQ buffet set up under cover on the patio from noon until 5 offers some outstanding food: fried chicken, hot dogs, hamburgers, BBQ beef sandwiches, potato salad, baked beans, cucumber/onion salad, vegetables, fruit salad, and ice cream (what else?) for dessert. The really talented folks can enter a couple of contests — in sand sculpture and balloon tossing (sign up when you enter the pool/patio area). Can't beat the admission price; it's free for Club members (bring your membership cards), and only \$2 for guests.

BIRDS GOTTA FLY, and those T-Bird card players really wing it when they get together for those shuffle-and-deal sessions that feature all kinds of gaming (with something new — prizes!), good conversation, and lots of munchies. The action starts at 10:30 a.m. at the group's next get-together on Thursday, May 28. Early-bird planners: Mark your calendars right now for next month's sessions on June 11 and June 25.

I GOTTA LOVE those two-for-one dinner specials and that foot-stompin' country/western music by the ever-popular Isleta Poor Boys. Fact is, that's the combination available this very evening. The two-for-one special features prime rib or halibut — your choice of two entrees for the low, low price of \$14.95. Afterward, make a sagebrush safari into the ballroom, where the Poor Boys strum their special music from 8 to midnight. Better call in that chuck wagon reservation right now (265-6791).

ONE MAN does not a party make. But a bunch of men — and women — does. If you're looking for an extraordinarily easy way to entertain your friends at a very reasonable price, there's an answer: Take over the pool/patio area for an evening, and let the Club furnish the food (everything from hot dogs and burgers to full dinners). Call catering honcho Maggie Pappas (265-6791) for details on how to be the most popular kid on the block.

'TIL I DIE, or at least until the end of May, I'll keep reminding everyone who's not a member to take advantage of the Club's month-long open house. Here's your chance to check out the place. Enjoy the two-for-ones, great dance bands, happy-hour specials, etc., etc., at the same reasonable prices paid by club members. But hurry — the merry month ends soon; don't let this golden opportunity slip through your fingers.

CAN'T HELP getting itchy feet when Spinning Wheel belts out those Latin rhythms, and everybody gets flamenco fever. That's what happens next Friday evening, May 29, from 8 p.m. to midnight, right after the two-for-one special featuring filet mignon or scallops. Dinner reservations recommended.

LOVIN' that pool time, but have to watch junior instead? Join the swimming mamas co-op, and share kid-watching duties at the pool/patio this summer. Here's how it works: You watch another mother's children while she's off doing laps, and then she does the same for you. More info from Mary Lauffer at 265-7218.

THAT MAN OF MINE — and everybody else, as well — can still buy a full summer's worth of good times by purchasing season pool/patio passes — surely the biggest bargain in town. The passes

let you enjoy this best-in-the-West facility at most reasonable prices: individual, \$15; couple, \$30; family of three, \$45. Add \$5 for each additional family member. Where else can you find four pools, a cool (and covered) patio, playground, volleyball and basketball courts, a spa, horseshoe pits, and lots of green grass and shade trees? Nowhere, that's where!

THE SONG IS ENDED, but the melody lingers on. That's what you'll say when you return from one of those amazing adventures put together by the C-Club Travel Committee. An example:

North to Alaska — You'll spin yarns like crazy after your return from a once-in-a-lifetime dream trip to our largest state this fall. Two ways to go on this one: land/cruise or cruise-only. Either way, spectacular scenery is yours for the looking. The land/cruise package (Sept. 8-20) covers city tours of Anchorage and Fairbanks; a good look at Alaska's "jewel," Mt. McKinley; a ride on the McKinley Explorer train; and a stern-wheeler cruise as part of your stay in Fairbanks. Cruise-only types join the rest of the folks on Sept. 13 for a fantastic week-long cruise along the coast of Alaska all the way from Whittier to Vancouver. Your floating home-away-from-home, the luxurious *Regent Sea*, stops along the way at Ketchikan (with a collection of totem poles second to none), Juneau (Alaska's capital), and Skagway (where the Klondike gold rush got its start). The land/cruise option costs \$2325/person (double); cruise-only people pay \$1642. Bunk with a few more people (triples, quads) and get a price break. Final payment not due until July 20.

FLEE TO THE FLEA MARKET sponsored by the Coronado Aquatic Club on Saturday, May 30, from 8 a.m. to 3 p.m. at First National Bank, Montgomery & Wyoming NE. If you'd like to donate some fleas to this CAC fund-raiser or need more info, call Sue Lawrence (293-7907).

SUMMER-STYLE FAMILY NIGHT on June 6 features free swimming from 4 to 8 p.m. (yes, we said *free*), a BBQ buffet served on the patio (5-7 p.m.), and cartoons. As usual, there's a movie feature — "Charlie, the Lonesome Cougar" — on the big screen (outdoors too) at 6 p.m. Put this one on your family calendar right now; it's an event not to be missed.

THOSE PEOPLE-PLEASIN' POOR BOYS from Isleta return to the Club two weeks from tonight (June 5), right after the two-for-one featuring filet mignon or scallops — not bad fare for trail riders,

right? It's the first Friday in the month, so that means everyone has a chance to brush up on c/w stomp skills during lessons offered from 7:30 to 8:30 p.m. Afterward, shuffle around to the tunes of those irrepressible (irreplaceable?) Isletans from 8:30 to 12:30.

THUNDERBIRDS CAN BENEFIT from a program on that very subject on Monday, June 8, at 1 p.m. at the south end of the ballroom. A representative from Sandia's Benefits organization will be on hand to discuss health insurance, Medicare, and retirement benefits. Join the group for lunch (around noon), then tune in for this very beneficial program. All retirees — not just T-Birds — are invited, according to honcho Charlie Kaspar. If you have specific questions on these subjects that you'd like to have answered during the meeting, let Pat Liguori know (256-3613). Make a day of it by attending the T-Bird board meeting, immediately following the benefits presentation.

Coming Soon . . .

VCP distributions are coming your way in the not-too-distant future. If you're not yet prepared to deal with that, there are still several chances to learn about tax effects, IRA rollovers, investment options, and other details. Here's a schedule of seminars coming up in the next couple of weeks:

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|----------|---|
| May 26 - | Waddell & Reed (Gail Whaley on financial planning), 4:45-6 p.m., Eldorado room. |
| May 26 - | The Albuquerque Agency (Bill Williams on annuities), 4:45-5:15 p.m., Conquistador room. |
| May 27 - | Realty Income Corp.; Financial Network Corp. (John McPherson and Guy Trujillo on real estate), 5 p.m., Eldorado room. |
| May 28 - | E. F. Hutton (Greg Zanetti on investment options), 4:45-6 p.m., Eldorado room. |

Obscuring Patents



While Britain tries to make the patent system more friendly, India unwittingly provides an object lesson in how not to do it.

The Indian government publishes an official gazette which lists new patents. As an aid to searchers it includes a synopsis of each new invention.

Recently published Indian patent 157418 claims "an opto-mechanical-cum-electric device for measuring and displaying fibrous material length and optical thickness parameters." That is just the title. The synopsis runs to more than 1250 words, in a single sentence.

New Scientist



PLAYING AROUND in the children's pool are C-Club lifeguards (from left) Missy Griego, Alan Sheldahl, and Su Gorton. They invite everyone to join them for the grand opening celebration next Monday.